#9

SEQUENCE LISTING

<110> OREGON HEALTH AND SCIENCES UNIVERSITY
BURROWS, GREGORY G.
VANDENBARK, ARTHUR A.

<120> RECOMBINANT MHC MOLECULES USEFUL FOR MANIPULATION OF ANTIGEN-SPECIFIC T-CELLS

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<130> 899-58137

<140> US 09/847,172
<141> 2001-05-01

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<150> US 09/153,586
<151> 1998-09-15

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<150> US 60/064,552
<151> 1997-09-16

<160> 44

<170> PatentIn version 3.1

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<213> Rattus sp.

<220>
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<222> (3)..(560)
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   1               5                  10                  15

ctg tgc tac tac acc aac ggg acg cag cgc ata cgg gat gtg atc aga        95
Leu Cys Tyr Tyr Thr Asn Gly Thr Gln Arg Ile Arg Asp Val Ile Arg
               20                  25                  30

tac atc tac aac cag gag gag tac ctg cgc tac gac agc gac gtg ggc       143
Tyr Ile Tyr Asn Gln Glu Glu Tyr Leu Arg Tyr Asp Ser Asp Val Gly
            35                  40                  45

gag tac cgc gcg ctg acc gag ctg ggg cgg ccc tca gcc gag tac ttt       191
Glu Tyr Arg Ala Leu Thr Glu Leu Gly Arg Pro Ser Ala Glu Tyr Phe
        50                  55                  60
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aac aag cag tac ctg gag cag acg cgg gcc gag ctg gac acg gtc tgc      239
Asn Lys Gln Tyr Leu Glu Gln Thr Arg Ala Glu Leu Asp Thr Val Cys
    65                  70                  75

aga cac aac tac gag ggg tcg gag gtc cgc acc tcc ctg cgg cgg ctt      287
Arg His Asn Tyr Glu Gly Ser Glu Val Arg Thr Ser Leu Arg Arg Leu
80                  85                  90                  95

gga ggt caa gac gac att gag gcc gac cac gta gcc gcc tat ggt ata      335
Gly Gly Gln Asp Asp Ile Glu Ala Asp His Val Ala Ala Tyr Gly Ile
                100                 105                 110

aat atg tat cag tat tat gaa tcc aga ggc cag ttc aca cat gaa ttt      383
Asn Met Tyr Gln Tyr Tyr Glu Ser Arg Gly Gln Phe Thr His Glu Phe
            115                 120                 125

gat ggt gac gag gaa ttc tat gtg gac ttg gat aag aag gag acc atc      431
Asp Gly Asp Glu Glu Phe Tyr Val Asp Leu Asp Lys Lys Glu Thr Ile
        130                 135                 140

tgg agg atc ccc gag ttt gga cag ctg aca agc ttt gac ccc caa ggt      479
Trp Arg Ile Pro Glu Phe Gly Gln Leu Thr Ser Phe Asp Pro Gln Gly
    145                 150                 155

gga ctt caa aat ata gct ata ata aaa cac aat ttg gaa atc ttg atg      527
Gly Leu Gln Asn Ile Ala Ile Ile Lys His Asn Leu Glu Ile Leu Met
160                 165                 170                 175

aag agg tca aat tca acc caa gct gtc aac taa ctcgag                  566
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<210> 2
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<212> PRT
<213> Rattus sp.

<400> 2

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Cys Tyr Tyr Thr Asn Gly Thr Gln Arg Ile Arg Asp Val Ile Arg Tyr
            20                  25                  30

Ile Tyr Asn Gln Glu Glu Tyr Leu Arg Tyr Asp Ser Asp Val Gly Glu
        35                  40                  45

Tyr Arg Ala Leu Thr Glu Leu Gly Arg Pro Ser Ala Glu Tyr Phe Asn
    50                  55                  60
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Lys Gln Tyr Leu Glu Gln Thr Arg Ala Glu Leu Asp Thr Val Cys Arg
65                  70                  75                  80

His Asn Tyr Glu Gly Ser Glu Val Arg Thr Ser Leu Arg Arg Leu Gly
                85                  90                  95

Gly Gln Asp Asp Ile Glu Ala Asp His Val Ala Ala Tyr Gly Ile Asn
            100                 105                 110

Met Tyr Gln Tyr Tyr Glu Ser Arg Gly Gln Phe Thr His Glu Phe Asp
        115                 120                 125

Gly Asp Glu Glu Phe Tyr Val Asp Leu Asp Lys Lys Glu Thr Ile Trp
    130                 135                 140

Arg Ile Pro Glu Phe Gly Gln Leu Thr Ser Phe Asp Pro Gln Gly Gly
145                 150                 155                 160

Leu Gln Asn Ile Ala Ile Ile Lys His Asn Leu Glu Ile Leu Met Lys
                165                 170                 175

Arg Ser Asn Ser Thr Gln Ala Val Asn
            180                 185
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<210> 3
<211> 113
<212> DNA
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<220>
<223> Antigen/linker insert

<220>
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<222> (3)..(113)
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<400> 3

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cc atg ggc aga gac tcc cca cag aag agc cag agg act cag gat gag        47
   Met Gly Arg Asp Ser Pro Gln Lys Ser Gln Arg Thr Gln Asp Glu
   1               5                  10                  15

aac cca gtg gtg cac ttc gga ggt gga ggc tca cta gtg ccc cga ggc       95
Asn Pro Val Val His Phe Gly Gly Gly Gly Ser Leu Val Pro Arg Gly
                20                  25                  30

tct gga ggt gga ggc tcc                                             113
Ser Gly Gly Gly Gly Ser
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<210> 4
<211> 37
<212> PRT
<213> Artificial Sequence

<220>
<223> Antigen/linker insert

<400> 4

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Pro Val Val His Phe Gly Gly Gly Gly Ser Leu Val Pro Arg Gly Ser
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Gly Gly Gly Gly Ser
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<220>
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<222> (3)..(83)
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1 5 10 15

acg acc cac tac ggt gga ggt gga ggc tca cta gtg 83
Thr Thr His Tyr Gly Gly Gly Gly Gly Ser Leu Val
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<210> 6
<211> 27
<212> PRT
<213> Artificial Sequence

<220>
<223> Alternative antigen encoding sequences for the expression cassett

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1 5 10 15

Thr His Tyr Gly Gly Gly Gly Gly Ser Leu Val
20 25

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<222> (3)..(89)
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Met Gly Arg Asp Ser Lys Leu Glu Leu Gln Ser Ala Leu Glu Glu
1 5 10 15

gct gaa gct tcc ctg gaa cac gga ggt gga ggc tca cta gtg 89
Ala Glu Ala Ser Leu Glu His Gly Gly Gly Gly Ser Leu Val
20 25

<210> 8
<211> 29
<212> PRT
<213> Artificial Sequence

<220>
<223> Alternative antigen encoding sequences for the expression cassett
e

<400> 8

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1 5 10 15

Glu Ala Ser Leu Glu His Gly Gly Gly Gly Ser Leu Val
20 25

<210> 9

<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 9
aattcctcga gatggctctg cagacccc 28

<210> 10
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 10
tcttgacctc caagccgccg cagggaggtg 30

<210> 11
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 11
cggcggcttg gaggtcaaga cgacattgag g 31

<210> 12
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 12
gcctcggtac cttagttgac agcttgggtt gaatttg 37

<210> 13
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 13
cagggaccat gggcagagac tcccca 26

<210> 14
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
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<400> 14
gcctcctcga gttagttgac agcttgggtt 30

<210> 15
<211> 128
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 15
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gaagtgcacc actgggttct catcctgagt cctctggctc ttctgtgggg agtctctgcc 120

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<210> 16
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<213> Artificial Sequence

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<223> PCR primer

<400> 16
gctccccgcg ggatttcgtg taccagttca a 31

<210> 17
<211> 92
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 17
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ctacggtgga ggtggaggct cactagtgcc cc 92

<210> 18

<211> 92
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 18
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ccttgccgga ggagtctctg cccatggtaa ta 92

<210> 19
<211> 98
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 19
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ttccctggaa cacggaggtg gaggctcact agtgcccc 98

<210> 20
<211> 98
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 20
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actgcagttc cagtttggag tctctgccca tggtaata 98

<210> 21
<211> 184
<212> PRT
<213> Homo sapiens

<400> 21

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1 5 10 15

Arg Gly Glu Pro Arg Phe Ile Ala Val Gly Tyr Val Asp Asp Thr Gln
20 25 30

Phe Val Arg Phe Asp Ser Asp Ala Ala Ser Pro Arg Thr Glu Pro Arg

35 40 45

Pro Pro Trp Ile Glu Gln Glu Gly Pro Glu Tyr Trp Asp Arg Asn Thr
50 55 60

Gln Ile Phe Lys Thr Asn Thr Gln Thr Tyr Arg Glu Asn Leu Arg Ile
65 70 75 80

Ala Leu Arg Tyr Tyr Asn Gln Ser Glu Ala Gly Ser His Ile Ile Gln
85 90 95

Arg Met Tyr Gly Cys Asp Leu Gly Pro Asp Gly Arg Leu Leu Arg Gly
100 105 110

His Asp Gln Ser Ala Tyr Asp Gly Lys Asp Tyr Ile Ala Leu Asn Glu
115 120 125

Asp Leu Ser Ser Trp Thr Ala Ala Asp Thr Ala Ala Gln Ile Thr Gln
130 135 140

Arg Lys Trp Glu Ala Ala Arg Val Ala Glu Gln Leu Arg Ala Tyr Leu
145 150 155 160

Glu Gly Leu Cys Val Glu Trp Leu Arg Arg Tyr Leu Glu Asn Gly Lys
165 170 175

Glu Thr Leu Gln Arg Ala Asp Pro
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<210> 22
<211> 174
<212> PRT
<213> Homo sapiens

<400> 22

Arg Pro Arg Phe Leu Trp Gln Leu Lys Phe Glu Cys His Phe Phe Asn
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Gly Thr Glu Arg Val Arg Leu Leu Glu Arg Cys Ile Tyr Asn Gln Glu
20 25 30

Glu Ser Val Arg Phe Asp Ser Asp Val Gly Glu Tyr Arg Ala Val Thr
35 40 45

Glu Leu Gly Arg Pro Asp Ala Glu Tyr Trp Asn Ser Gln Lys Asp Leu
50 55 60

Leu Glu Gln Arg Arg Ala Ala Val Asp Thr Tyr Cys Arg His Asn Tyr
65 70 75 80

Gly Val Gly Glu Ser Phe Thr Val Gln Arg Arg Val Glu Glu His Val
85 90 95

Ile Ile Gln Ala Glu Phe Tyr Leu Asn Pro Asp Gln Ser Gly Glu Phe
100 105 110

Met Phe Asp Phe Asp Gly Asp Glu Ile Phe His Val Asp Met Ala Lys
115 120 125

Lys Glu Thr Val Trp Arg Leu Glu Glu Phe Gly Arg Phe Ala Ser Phe
130 135 140

Glu Ala Gln Gly Ala Leu Ala Asn Ile Ala Val Asp Lys Ala Asn Leu
145 150 155 160

Glu Ile Met Thr Lys Arg Ser Asn Tyr Thr Pro Ile Thr Asn
165 170

<210> 23
<211> 174
<212> PRT
<213> Mus sp.

<400> 23

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Gly Thr Gln Arg Val Arg Leu Leu Val Arg Tyr Phe Tyr Asn Leu Glu
20 25 30

Glu Asn Leu Arg Phe Asp Ser Asp Val Gly Glu Phe Arg Ala Val Thr
35 40 45

Glu Leu Gly Arg Pro Asp Ala Glu Asn Trp Asn Ser Gln Pro Glu Phe
50 55 60

Leu Glu Gln Lys Arg Ala Glu Val Asp Thr Val Cys Arg His Asn Tyr

65 70 75 80

Glu Ile Phe Asp Asn Phe Leu Val Pro Arg Arg Val Glu Glu His Thr
85 90 95

Ile Ile Gln Ala Glu Phe Tyr Leu Leu Pro Asp Lys Arg Gly Glu Phe
100 105 110

Met Phe Asp Phe Asp Gly Asp Glu Ile Phe His Val Asp Ile Glu Lys
115 120 125

Ser Glu Thr Ile Trp Arg Leu Glu Glu Phe Ala Lys Phe Ala Ser Phe
130 135 140

Glu Ala Gln Gly Ala Leu Ala Asn Ile Ala Val Asp Lys Ala Asn Leu
145 150 155 160

Asp Val Met Lys Glu Arg Ser Asn Asn Thr Pro Asp Ala Asn
165 170

<210> 24
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<212> PRT
<213> Rattus sp.

<400> 24

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20 25 30

Ile Tyr Asn Gln Glu Glu Tyr Leu Arg Tyr Asp Ser Asp Val Gly Glu
35 40 45

Tyr Arg Ala Leu Thr Glu Leu Gly Arg Pro Ser Ala Glu Tyr Trp Asn
50 55 60

Ser Gln Lys Gln Tyr Leu Glu Gln Thr Arg Ala Glu Leu Asp Thr Val
65 70 75 80

Cys Arg His Asn Tyr Glu Gly Ser Glu Val Arg Thr Ser Leu Arg Arg
85 90 95

Leu Ala Asp His Val Ala Ala Tyr Gly Ile Asn Met Tyr Gln Tyr Tyr
100 105 110

Glu Ser Arg Gly Gln Phe Thr His Glu Phe Asp Gly Asp Glu Glu Phe
115 120 125

Tyr Val Asp Leu Asp Lys Lys Glu Thr Ile Trp Arg Ile Pro Glu Phe
130 135 140

Gly Gln Leu Thr Ser Phe Asp Pro Gln Gly Gly Leu Gln Asn Ile Ala
145 150 155 160

Ile Ile Lys His Asn Leu Glu Ile Leu Met Lys Arg Ser Asn Ser Thr
165 170 175

Gln Ala Val Asn
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<210> 25
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Artificial peptide

<400> 25

Gly Ser Leu Pro Gln Lys Ser Gln Arg Ser Gln Asp Glu Asn Pro Val
1 5 10 15

Val His Phe

<210> 26
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Artificial peptide

<400> 26

Ser Gly Lys Asp Ser His His Ala Ala Arg Thr Thr His Tyr Gly
1 5 10 15

<210> 27
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Artificial peptide

<400> 27

Lys Leu Glu Leu Gln Ser Ala Leu Glu Glu Ala Glu Ala Ser Leu Glu
1 5 10 15

His

<210> 28
<211> 95
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 28
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ggtgcacttc ggaggtggag gctcactagt gcccc 95

<210> 29
<211> 94
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

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ggctcttctg tggggagtct ctgcccatgg taat 94

<210> 30
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Artificial peptide

<400> 30

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1 5 10 15

Val His Phe

<210> 31
<211> 29
<212> DNA
<213> Artificial Sequence

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<400> 31
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<210> 32
<211> 45
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

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<210> 33
<211> 45
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 33
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<210> 34
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 34
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<211> 20

<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 35
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<210> 36
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

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<211> 132
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

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acctccacgc ggggtaacga tgtttttgaa gaagtgaaca accgggtttt ctcgggtgtc 120

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<212> DNA
<213> Artificial Sequence

<220>
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<400> 38
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<210> 39
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 39
tcaaagtcaa acataaactc gc 22

<210> 40
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
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<400> 40
gcgagtttat gtttgacttt ga 22

<210> 41
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
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<210> 42
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
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<400> 42

Ala Thr Gly Phe Lys Gln Ser Ser Lys Ala Leu Gln Arg Pro Val Ala
1 5 10 15

Ser

<210> 43
<211> 641
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (3)..(635)

<223>

<400> 43

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   Met Gly Asp Thr Arg Glu Asn Pro Val Val His Phe Phe Lys Asn
   1               5                  10                  15

atc gtt acc ccg cgt gga ggt gga ggc tca cta gtg ccc cga ggc tct        95
Ile Val Thr Pro Arg Gly Gly Gly Gly Ser Leu Val Pro Arg Gly Ser
                20                  25                  30

gga ggt gga ggc cca cgt ttc ctg tgg cag cct aag agg gag tgt cat       143
Gly Gly Gly Gly Pro Arg Phe Leu Trp Gln Pro Lys Arg Glu Cys His
            35                  40                  45

ttc ttc aat ggg acg gag cgg gtg cgg ttc ctg gac aga tac ttc tat       191
Phe Phe Asn Gly Thr Glu Arg Val Arg Phe Leu Asp Arg Tyr Phe Tyr
        50                  55                  60

aac cag gag gag tcc gtg cgc ttc gac agc gac gtg ggg gag ttc cgg       239
Asn Gln Glu Glu Ser Val Arg Phe Asp Ser Asp Val Gly Glu Phe Arg
    65                  70                  75

gcg gtg acg gag ctg ggg cgg cct gac gct gag tac tgg aac agc cag       287
Ala Val Thr Glu Leu Gly Arg Pro Asp Ala Glu Tyr Trp Asn Ser Gln
80                  85                  90                  95

aag gac atc ctg gag cag gcg cgg gcc gcg gtg gac acc tac tgc aga       335
Lys Asp Ile Leu Glu Gln Ala Arg Ala Ala Val Asp Thr Tyr Cys Arg
                100                 105                 110

cac aac tac ggg gtt gtg gag agc ttc aca gtg cag cgg cga gtc atc       383
His Asn Tyr Gly Val Val Glu Ser Phe Thr Val Gln Arg Arg Val Ile
            115                 120                 125

aaa gaa gaa cat gtg atc atc cag gcc gag ttc tat ctg aat cct gac       431
Lys Glu Glu His Val Ile Ile Gln Ala Glu Phe Tyr Leu Asn Pro Asp
        130                 135                 140

caa tca ggc gag ttt atg ttt gac ttt gat ggt gat gag att ttc cat       479
Gln Ser Gly Glu Phe Met Phe Asp Phe Asp Gly Asp Glu Ile Phe His
    145                 150                 155

gtg gat atg gca aag aag gag acg gtc tgg cgg ctt gaa gaa ttt gga       527
Val Asp Met Ala Lys Lys Glu Thr Val Trp Arg Leu Glu Glu Phe Gly
160                 165                 170                 175

cga ttt gcc agc ttt gag gct caa ggt gca ttg gcc aac ata gct gtg       575
Arg Phe Ala Ser Phe Glu Ala Gln Gly Ala Leu Ala Asn Ile Ala Val
                180                 185                 190

gac aaa gcc aac ttg gaa atc atg aca aag cgc tcc aac tat act ccg       623
Asp Lys Ala Asn Leu Glu Ile Met Thr Lys Arg Ser Asn Tyr Thr Pro
            195                 200                 205

atc acc aat taa ctcgag                                              641
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Ile Thr Asn
210

<210> 44
<211> 210
<212> PRT
<213> Homo sapiens

<400> 44

Met Gly Asp Thr Arg Glu Asn Pro Val Val His Phe Phe Lys Asn Ile
1 5 10 15

Val Thr Pro Arg Gly Gly Gly Gly Ser Leu Val Pro Arg Gly Ser Gly
20 25 30

Gly Gly Gly Pro Arg Phe Leu Trp Gln Pro Lys Arg Glu Cys His Phe
35 40 45

Phe Asn Gly Thr Glu Arg Val Arg Phe Leu Asp Arg Tyr Phe Tyr Asn
50 55 60

Gln Glu Glu Ser Val Arg Phe Asp Ser Asp Val Gly Glu Phe Arg Ala
65 70 75 80

Val Thr Glu Leu Gly Arg Pro Asp Ala Glu Tyr Trp Asn Ser Gln Lys
85 90 95

Asp Ile Leu Glu Gln Ala Arg Ala Ala Val Asp Thr Tyr Cys Arg His
100 105 110

Asn Tyr Gly Val Val Glu Ser Phe Thr Val Gln Arg Arg Val Ile Lys
115 120 125

Glu Glu His Val Ile Ile Gln Ala Glu Phe Tyr Leu Asn Pro Asp Gln
130 135 140

Ser Gly Glu Phe Met Phe Asp Phe Asp Gly Asp Glu Ile Phe His Val
145 150 155 160

Asp Met Ala Lys Lys Glu Thr Val Trp Arg Leu Glu Glu Phe Gly Arg
165 170 175

Phe Ala Ser Phe Glu Ala Gln Gly Ala Leu Ala Asn Ile Ala Val Asp
180 185 190

Lys Ala Asn Leu Glu Ile Met Thr Lys Arg Ser Asn Tyr Thr Pro Ile
195 200 205

Thr Asn
210